RESEARCH HIGHLIGHTS

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RECYCLE: LIFECYCLE – HOW TO RENOVATE FOR CHANGE

Introduction

This study, completed under the CMHC External Research Program, examines how to renovate housing in a way which facilitates future adaptation, in order to allow people to live as long as possible in the building with minimum modification. It provides a set of design strategies for such adaptable renovations involving a variety of common, detached housing types. The goal of these strategies is to inform homeowners and prospective homeowners on ways to achieve the greatest flexibility through alterations and additions to their houses to meet their changing needs.

Much that has been written about adaptable housing involves designs for creating barrier-free environments or adapting floor plans and fixture layouts for an aging population or for people with disabilities. All aspects of life, from working at home to entertaining guests in limited space, can be thought of with adaptability in mind. Most of what has been written about adaptable design involves concepts for new housing. This study focuses on adaptability in renovations only.

Methodology

Information from Statistics Canada, CMHC and other technical and design sources was reviewed in order to gain insights into the types of dwellings Canadians are inhabiting and the problems associated with renovations, as well as such things as current trends and lifestyle patterns. A cross-section of recent building permits from the City of Vancouver Planning Department was used to examine the frequency and type of renovation taking place in Vancouver in recent years.

Zoning bylaws from several cities across Canada, including Vancouver, Edmonton, Calgary, Winnipeg, Toronto, Ottawa and Montréal were reviewed.

The impact of climate was studied. Discussions were held with design professionals and building contractors. The National Building Code was also consulted as the principal source of building construction.

Findings

The Existing House

Over half (56%) of Canadians live in detached housing. Of these, nearly 64% are owners. Only 2% of Canadians live in a private dwelling built after 1996–homes which may be classified as new. The large majority of homes are more than thirty years old and over half were built from 1946 to 1980.

Adding bedroom type rooms to a house for future use, even without closets, can be considered part of a flexible strategy. Adding bathrooms may work against a strategy of flexibility because it sets in place walls and fixtures which may be very costly to move in the future, but planning plumbing and electrical layouts for future additions may be appropriate.

Kitchen renovations and additions are one of the most common forms of alterations to existing houses. Perhaps more than anything else, modern lifestyles have altered the role and configuration of the kitchen.

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Many zoning by-laws restrict or disallow suites while others encourage them. Additionally, many houses have suites which have never been legalized under the relevant current by-laws, often because of the costs associated with bringing suites into compliance with contemporary building codes.

Renovations

Renovations are defined, for the purpose of this study, as additions or modifications to change or improve the configuration, function, livability, or use of a building.

Renovations involving existing detached houses can generally be broken down into three different categories:

- renovations within existing walls and roofs, maintaining the house's footprint;
- additions;
- additional separate dwellings on the same lot.

Modifications within the existing structure of a building are the most common types of renovations, and the most common form is finishing a basement.

Limiting Criteria

The extent to which a renovation is possible or feasible is based on many factors, such as:

- zoning;
- building codes and bylaws;
- climate and natural forces; and
- costs.

Zoning commonly refers to by-law restrictions for development on privately owned land and may restrict, for example, uses which can occur within a building and the size, height, and area of the building, etc.

Building codes and by-laws generally regulate fire, health, and safety issues in buildings.

Often, remodeling projects are related directly to weatherization such as installing insulated windows or adding insulation.

All houses should be designed to minimize the impact of rising energy costs.

Renovation Costs

Renovations, which are often difficult to accurately cost, usually cost more than new construction on a per square foot basis. Different types of renovations vary considerably in costs. Generally the smaller the renovation, the higher the per square foot costs. This is because there are certain fixed costs and overhead costs which have to be paid regardless of the size of the project. Discounts may be available for larger purchases of materials or fixtures. There are often many unforeseen costs in a renovation.

Design Strategies

Design strategies can be applied to houses so that renovations undertaken are best able to provide flexibility in the future within reasonable cost constraints.

The simplest way to approach a renovation is to reconsider the use of existing rooms. Underdeveloped space such as basements and attics can also be renovated.

Before adding to an existing house, zoning and code issues as well as light, privacy and views from the windows of the new addition, should be considered in deciding its location. The location of utilities must be examined carefully as moving meters is costly. Sometimes, the optimal solution is the construction of a new accessory building on the property.

Design strategies to consider include:

- Where possible, build a full basement to allow for future flexibility. Ensure adequate headroom, natural daylight, ventilation and egress.
- Interior walls can take many forms from curtains to conventional frame and drywall construction. Consider carefully future requirements and possibilities in selection of wall type; where walls may be reconfigured in the future, refrain from installing mechanical, plumbing or electrical rough-ins where possible.
- Design subfloor thickness to avoid different levels of floor finishes.
- Use simple, sloped roof design with overhangs on all sides to avoid future water problems.
- When choosing exterior cladding, select material that is long lasting and easy to match to allow future flexibility in terms of additions and new or enlarged openings. Use trim to break continuity between existing and new cladding.

Conclusions

To provide design strategies which allow flexibility in the renovation of houses, it is necessary to begin with a review of the existing house–both in terms of style, type and physical components–and of the types and characteristics of future renovations which may be required. The limiting criteria provide a reality check or framework within which renovations can happen. The design strategies, then, focus on issues and possibilities to be considered during the renovation process with respect to future flexibility and adaptability.

Most Canadians currently live in detached housing. Most will experience changes in their needs and lifestyles over time. As homeowners are faced with change they must decide whether to move, or whether to remain in their homes and renovate instead. In order to best accommodate changing lifestyle requirements, design strategies which create flexible environments or components which can accommodate change will allow owners and their families to stay longer in their homes.

Most Canadians live in houses which are not new, nor which are tailored to their specific needs. Existing houses will likely have characteristics which do not meet their owner's changing needs. These characteristics vary with the type of house and its age, as well as the region in which it is located, although every house will have its own unique characteristics.

Adaptable strategies should begin with owners clearly identifying their current and future needs and then analyzing the spatial and structural characteristics of their house. Often a minimal number of changes or a series of simple alterations is all that is required to achieve a flexible home environment. Design strategies can be fairly broad in scope, but may also be fairly detailed, incorporating everything from plumbing and electrical fixture locations to finish materials and landscaping.

There are many limitations which will restrict the ability of homeowners to achieve any set of design strategies.

These include the cost of construction, as well as the nature of the existing buildings themselves in terms of their structural components, layout, and current state of repairs. Climate and regional characteristics will also influence the feasibility of design strategies as well as local zoning and building codes and by-laws.

The goal of any set of adaptable strategies is to achieve the maximum flexibility possible with a minimal amount of cost and disruption. By carefully exploring all the possible ways an adaptable home can be created, and by measuring them against the limiting criteria noted above, home owners should be able to adapt to their changing "lifecycle" by recycling and adapting their existing homes.

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